Remarks/Argument

The Applicants note with appreciation the Examiner's acknowledgment of the Applicants' Amendment to the Specification and Claims 1, 6, 7 and 15 in the paper submitted August 21, 2003.

Claims 2-4, 8-11, and 13-16 are canceled without prejudice. The Applicant has added new claim 18, which depends from Claim 1. Claims 1, 5, 7, 12, and 17 have been amended. Claim 18 indicates that the bacterial reverse transcriptase (RT) is derived from *E. coli* or *M. xanthus*. Support for new claim 18 can be found in Fig. 14 and SEQ ID Nos. 33-34 of the present specification. Upon entry of this amendment, Claims 1, 5, 7, 12, 17 and 18 are pending in the Application. Further, the Applicants have attended to the correction of minor informalities. No new matter has been added.

The Applicants note that SEQ ID NO: 45 in Claim 4 should have referred to SEQ ID NO: 52, to reflect the Applicants' amended sequence listing submitted April 8, 1999. Accordingly, the Applicants have identified SEQ ID NO: 52 in amended Claim 1 (which now incorporates the subject matter of cancelled Claim 4).

In accordance with the Examiner's helpful suggestions in the recent interview, the Applicants have amended Claim 1 to incorporate the subject matter of Claims 2 and 4, as well as to identify other structural components of the Applicants' bacterial reverse transcriptase (RT). Further, the Applicants have identified a fifth bacterial RT amino acid structural motif contained in the presently claimed RTs, which motif comprises Gly- Xaa_8-Pro wherein Xaa_8 is alanine, phenylalanine or serine. Claim 1 has been amended to recite this fifth amino acid motif. Support for this amendment to Claim 1 can be found in Fig. 14 of the Applicants' specification. More particularly, this motif is shown in the 4th boxed sequence in Fig. 14, row

three, which shows a structural motif of Gly-Xaa_8- Pro. The bacterial reverse transcriptase sequences shown in Fig. 14 have an alanine, phenylalanine or serine in the position corresponding to Xaa_8 in this amino acid motif. The presence of this fifth amino acid motif in the claimed bacterial reverse transcriptases is therefore fully described in Fig. 14.

The Applicants respectfully submit that MPEP §2163 states that an Applicant can meet the written description requirement through the use of Figures:

> An applicant may show possession of an invention by disclosure of drawings or structural chemical formulas that are sufficiently detailed to show that applicant was in possession of the claimed invention as a whole. See, e.g., *Vas-Cath*, 935 F.2d at 1565, 19 USPQ2d at 1118 ("drawings alone may provide a 'written description' of an invention as required by Sec. 112"); *In re Wolfensperger*, 302 F.2d 950, 133 USPQ 537 (CCPA 1962) (the drawings of applicant's specification provided sufficient written descriptive support for the claim limitation at issue); *Autogiro Co. of America v. United States*, 384 F.2d 391, 398, 155 USPQ 697, 703 (Ct. Cl. 1967)

Accordingly, the Applicants respectfully submit that the motif of Gly-Xaa_8-Pro is clearly described by Fig. 14 and, as a result, inclusion of this motif in Claim 1 is fully supported by the present specification.

The Applicants also submits with this response a Declaration under 37 C.F.R §1.130 that is signed by the Applicants' representative. The Applicants respectfully submit that the Declaration, along with the Terminal Disclaimers filed June 21, 1999, remove the Applicants' U.S. Patents 5,320,958 (US '958) and 5,434,070 (US '070) as prior art. For the Examiner's convenience, the Applicants enclosed herewith a copy of MPEP §718, which describes the context under which a §1.130(a) Declaration may be used to disqualify commonly owned patents as prior art.

Claim Rejections Under 35 U.S.C §112 First Paragraph

Claims 15 and 16 have been rejected under 35 U.S.C §112 first paragraph. The Applicants have canceled Claims 15 and 16, and as a result the rejection is now moot.

Claim Rejection under 35 U.S.C §112 Second Paragraph

Claims 1, 2, 4-6, 12, and 15-17 have been rejected under 35 U.S.C §112, second paragraph. The Applicants have canceled Claims 2, 4, 6, and 15-16. As a result, the rejection of these claims is now moot. In view of the Examiner's helpful suggestion, the Applicants have removed parentheses surrounding sequence identifiers.

Furthermore, the Applicants respectfully submit that the Amendment dated August 29, 2003 removed the phrase "substantially homologous" from Claim 1, and thus Claim 1 no longer includes the phrase "substantially homologous." As a result, the Applicants respectfully request withdrawal of the rejection of Claims 1, 5, 12, and 17 under 35 U.S.C. § 112 second paragraph.

Claim Rejections Under 35 U.S.C §102(b)

Claims 1, 2, 5, 6, 8, 10, 15 and 16 have been rejected under 35 U.S.C §102(b) as being anticipated by Lim and Maas. The Applicants have canceled Claims 2, 6, 8, 10, 15 and 16. As a result, the rejection of those claims is now moot. The rejection will be discussed with respect to Claims 1 and 5

The Applicants respectfully submit that, in light of the amendment to Claim 1, the rejection is now obviated. Namely, the Applicants respectfully submit that incorporation of the subject matter of Claim 4 into Claim 1 obviates the rejection of Claim 1 as anticipated by Lim and Maas. In particular, the Applicants have incorporated the amino acid motif of Xaa_7-Val-

Thr-Gly of SEQ ID No. 52 into Claim 1, wherein Xaa_7 is selected from the group consisting of arginine, glutamic acid, valine, or glutamine. Lim and Maas does not disclose a bacterial RT containing a motif of Xaa_7-Val-Thr-Gly. In Lim and Maas, the disclosed RT has a lysine in the position corresponding to Xaa_7 in the claimed amino acid motif.

Claim 5 has been amended to remove SEQ ID NO: 36, which corresponds to the *E. coli* RT sequence disclosed in Lim and Maas.

In view of the foregoing, the Applicants respectfully submit that Lim and Maas fails to disclose every element of Claim 1 and Claim 5. Withdrawal of the rejection of Claims 1 and 5 under 35 U.S.C. §102(b) as anticipated by Lim and Maas is respectfully requested.

Claim Rejections Under 35 U.S.C. §103(a)

Claims 1, 2, 4-8, and 15-17 have been rejected under 35 U.S.C §103(a) as unpatentable over either of US '958 or US '070 in view of Rice, Xiong, and Hsu. The Applicants have canceled Claims 2, 4-6, 8 and 15-17 and, as a result, the rejection of these claims is now moot.

The Applicants respectfully submit that the rejection of Claims 1 and 7 is obviated in view of the Applicants' §1.130 Declaration. The Applicants respectfully submit that the Applicants' §1.130 Declaration removes commonly owned US '958 and US '070 as prior art. In particular, 37 C.F.R. §1.130(a) states:

> (a) When any claim of an application or a patent under reexamination is rejected under 35 U.S.C. 103 on a U.S. patent or U.S. patent application publication which is not prior art under 35 U.S.C. 102(b), and the inventions defined by the claims in the application or patent under reexamination and by the claims in the patent or published application are not identical but are not patentably distinct, and the inventions are owned by the same party, the applicant or owner of the patent under reexamination may disqualify the patent or patent application publication as prior art. The patent or patent application publication can be disqualified as prior art by submission of:

(1) A terminal disclaimer in accordance with §1.321(c); and

(2) An oath or declaration stating that the application or patent under reexamination and patent or published application are currently owned by the same party, and that the inventor named in the application or patent under reexamination is the prior inventor under 35 U.S.C. 104.

The Applicants respectfully submit that the §1.130 Declaration indicates that the inventors named in the pending application are the prior inventors under 35 U.S.C §104. Further, the §1.130 Declaration notes that the inventors, named in the Application, invented the claimed subject matter before the actual date of invention of the subject matter of the reference claims. Further, the Applicants respectfully submit that MPEP §718 provides that the §1.130 Declaration "may be signed by the inventor(s), the attorney or agent of record, or assignee(s) of the entire interest."

The Applicants respectfully submit that US '958 and US '070 are not prior art under 35 U.S.C §102(b). 35 U.S.C §102(b) requires that "the invention was **patented** or described in a printed publication...**more than one year prior to the of the application for patent in the United States.**" (Emphasis added).

The current continuation application has an effective filing date of June 30, 1994, based on its priority to continuation Application No. 08/269,118 filed on June 30, 1994. Hence, the current application has an effective filing date within a year of the issue of US '070 and US '958. Specifically, the US '070 and US '958 patents issued on July 19, 1995 and June 13, 1994, respectively. Consequently, the aforementioned patents did not issue into valid U.S. patents more than one year before the date of the application for patent in the current application.

In view of the foregoing, the Applicants respectfully submit that the Applicants have satisfied the requirements set forth for a Declaration submitted under 37 C.F.R. §1.130(a).

Accordingly, the Applicants submit that US '070 and US '958 are not prior art. Withdrawal of the rejection of Claims 1 and 7 as unpatentable over either of US '958 or US '070 in view of Rice, Xiong, and Hsu is respectfully requested.

Claims 1, 2, 4-6, 8 and 15-17 have been rejected under 35 U.S.C. §103(a) as unpatentable over Hsu in view Lim and Maas. The Applicants have canceled Claims 2, 4, 6, 8 and 15-16; as a result, the rejection of these claims is now moot. The rejection will be discussed with respect to claims 1, 5 and 17.

Claim 1 now recites five distinct amino acid structural motifs found in bacterial reverse transcriptases that synthesize msDNA. The Applicants were the first to recognize that such structural motifs were present in msDNA-synthesizing reverse transcriptases from different bacteria.

The Applicants respectfully submit that Hsu did not recognize that the five claimed structural motifs were characteristic of bacterial RTs that synthesize msDNA. Rather, Hsu taught that the RTs of *M. xanthus* and *S. aurantiaca* were different from the RT of *E. coli*. The Examiner is directed to page 2385 of Hsu, which states:

> In contrast to *M. xanthus*, only 13% of *E. coli* natural isolates contain retrons, and these retrons **show substantial diversities** in their primary sequences and sizes of msDNAs, mdsRNAs, and **RTs** (for reviews, see references 9 and 10). (Emphasis added).

Thus, Hsu teaches that the RTs of *M. xanthus* (and by comparison *S. aurantiaca*) are different as compared to *E. coli* RTs, for example the RT disclosed in Lim and Maas. Indeed, Hsu makes no reference to the five claimed structural motifs in the RT of different bacteria, let alone that these motifs are characteristic of bacterial RTs that synthesize msDNA. In fact, Hsu states on pg. 2385 that the "high identity between (*M. xanthus* and *S. aurantiaca*) RTs is unique among all the other known bacterial RTs . . ." The similarity of *M. xanthus* and *S.*

aurantiaca RT sequences is therefore not predictive of sequence similarity of RTs across different bacteria species. Hsu's teaching that certain bacterial retrons (which encode RTs) show "substantial diversities," and that bacterial RTs do not show high sequence identity with each other, would therefore lead one skilled in the art away from using common amino acid motifs to identify a class of RTs derived from different bacteria.

Lim and Maas disclose a single *E. coli* RT which lacks one of the five structural motifs recited in the present claims (see the discussion regarding the 102(b) rejection of claims 1 and 5 over this reference, *supra*). Lim and Maas do not teach or suggest that the five claimed structural motifs would be found in RTs from different bacteria, nor that these motifs are characteristic of bacterial RTs which synthesize msDNA. Moreover, Lim and Maas do not teach or suggest that the sequence of the disclosed RT can be altered at all, let alone in a given structural motif.

One skilled in the art would therefore not be motivated to combine the teachings of Hsu and Lim and Maas to produce the presently claimed bacterial RTs. Applicants respectfully request that the 35 U.S.C. §103(a) rejection of claims 1, 5 and 17 be withdrawn.

Further, the Applicants respectfully submit that new Claim 18, which indicates that the RT is derived from *E. coli* or *M. xanthus*, is not rendered obvious by Hsu or Lim and Maas, either alone or in combination.

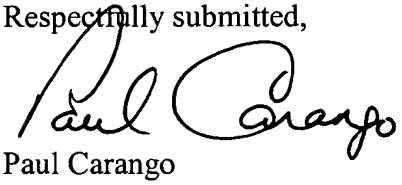
Claim1 18 should be accorded a priority date which predates the Hsu reference. The most recent Official Action and the Office Action dated June 6, 1998 acknowledge that RTs from *E .coli* and *M. xanthus* receive the benefit of an earlier filing date. The Applicants respectfully submit that Serial No. 07/817,430 (U.S. Patent No, 5,434,070) has a filing date January 6, 1992. The present Application is a CIP of the U.S. Patent No, 5,434,070 (U.S.

'070) and claims priority to this issued patent. U.S. '070 contains direct support for the claimed RTs found in *E. coli* and *M. xanthus*; support for the subject matter of Claim 18 can be found throughout U.S. '070 and more particularly in Examples 3-8, and Table 1 of U.S. '070. In view of the foregoing, the Applicants respectfully submit that Claim 18 has a priority date of at least January 6, 1992, which is prior to the publication of Hsu (April 1992). Thus, Hsu is not prior art against Claim 18.

As stated above, Lim and Maas disclose a single *E. coli* RT which lacks one of the five structural motifs recited in the present claims (see the discussion regarding the 102(b) rejection of claims 1 and 5 over this reference, *supra*). Lim and Maas do not teach or suggest that the five claimed structural motifs would be found in RTs from different bacteria, nor that these motifs are characteristic of bacterial RTs which synthesize msDNA. Moreover, Lim and Maas do not teach or suggest that the sequence of the disclosed RT can be altered at all, let alone in a given structural motif. One skilled in the art would therefore not be motivated from the teaching of Lim and Maas to modify the RT disclosed in Lim and Maas to produce the bacterial RTs of claim 18.

In view of the foregoing, the Applicants respectfully submit that the claims are now in condition of allowance, which is respectfully requested.

Respectfully submitted,



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